



## **Remunicipalisation and Foundation of Municipal Utilities in the German Energy Sector: Details about Newly Established Enterprises**

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### **ABSTRACT**

Since the majority of network concession contracts in Germany were set to expire some time between 2005 and 2016, a window of opportunity arose in which to rebuild and remunicipalise the local energy supply. As a result, 72 new local power companies were established in Germany within the space of just seven years (between early 2005 and late 2012). This paper provides an introduction to the topic of establishing municipal utilities in Germany. The findings were identified on the basis of the comprehensive screening of all newly established municipal utilities in Germany. Our analysis provides information about regional concentration, the size of municipalities, the legal forms of the newly founded municipal public utilities and the role of strategic partnerships. The key findings are that remunicipalisation is not a question of size and that knowledge gaps may be closed by entering into close strategic partnerships.

### **KEYWORDS**

*Transition research, Energy transition, Remunicipalisation, Municipal utilities,  
Local politics.*

### **INTRODUCTION**

The ownership of Germany's energy system is concentrated in the hands of large utilities operating across the generation, distribution and supply sectors. For a long time, regional (largely privately owned) energy companies held and dominated the transmission and distribution assets. Municipal companies held only a minor share of local distribution networks. The intention of German legislation to liberalise the energy market led to a paradox in that the mergers and acquisitions that occurred in the German energy market whittled market players down to the "Big Four" companies (RWE, E.ON, EnBW and Vattenfall). At the same time, the holdings and functions of municipal energy companies began to diminish. Many analysts predicted a "decline of the German municipal energy companies" [1]. Although the incumbent utilities generally opposed

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the formation of new municipal utilities [2], the energy sector in Germany has been undergoing change for years, following the launch of numerous new municipal utility companies. This phenomenon is not only visible in large cities such as Hamburg and Berlin, but also in medium-sized towns and many rural regions.

A number of privatisations were realised in financially stressed municipalities of West Germany as early as the beginning of the 1980s. It became increasingly popular to privatise local public services in the 1980s and early 1990s. After two decades of local governments having to face exceptionally tough budgetary cuts following austerity policies adopted by central governments and a number of federal states in Germany, privatisation and the outsourcing of public services became the dominant trends. The federal austerity policy resulted primarily in municipalities bearing the brunt of the cuts. Dwindling tax revenues and an expansion of tasks put many cities in Germany under financial pressure. The enormous debt burden of many German municipalities caused by these developments is primarily the result of the structural underfunding of cities. In some places, municipal enterprises were privatised in order to generate short-term revenue for maintaining the cultural and social infrastructure. Faced with empty coffers, many communities and towns adopted the central strategy of selling off public property. Decades later, a countermovement to the paradigm of privatisation evolving from the field of municipal power utilities is currently discernible [3, 4], now that the false promises of energy privatisation and liberalisation have become apparent. The trend towards contracting out at that time can be explained by the global increase in popularity of the conservative political and economic movement. The resurgence of privatisation was energised by the popularity of neo-liberalism, which was becoming increasingly dominant. Today, there are numerous indications of movement in the opposite direction, particularly in the municipal water and energy sector [3]. This is because, in the medium term, municipalities' financial problems are jeopardising the provision of municipal public services in the infrastructure sector (e.g. gas, water and electricity supply) as well as, increasingly, in the social sector. With reference to this contemporary movement, many local governments, politicians and councillors have begun to view their appraisal of municipally controlled and operated utilities as a move towards generating benefits from municipal utilities. In a bid to regain local responsibility for security of supply, a large number of projects have been undertaken in recent years to lead utility companies back into public ownership. The result is a renaissance of municipal utility companies and the municipal economy in Germany [5].

A cornerstone of German energy policy and the energy transition (*Energiewende*) is the Renewable Energy Act. Not only does this piece of legislation boost the domestic generation of renewable energies, it also fosters local activities. One important effect of this development is the fact that the energy industry is constantly changing. On the one hand, utilities are challenged with growing expectations concerning customer service, technological developments and increased legal regulation. On the other hand, these developments offer plenty of new opportunities in the substantive development of energy efficiency and renewable energies. In energy supply and demand management at the local level, too, the implementation of 100% renewable energy represents an important step towards a decentralised and more efficient power supply. There are many good reasons to doubt that incumbents and established energy companies will be unable to adapt adequately to the changing external conditions and requirements brought about by the energy transition. Rather than adapting to these developments, big energy companies in Germany and Europe positioned themselves against the megatrend of the energy transition, ignored important niche innovations, impeded actors in various ways and downright "overslept" the energy transition [6]. And yet the embracing of innovation and collaboration with other actors are vital aspects of the energy transition, required to

decentralise power production [7]. Many cities, towns and villages have ambitious visions and targets to achieve 100% renewable energy, zero carbon dioxide emissions or zero-impact communities. In this respect, numerous academics have highlighted the importance of community engagement in renewable energy projects [8, 9]. One good example of a successful process of change can be found in Denmark. Thanks to the cooperative nature of its wind energy provision, Denmark is a pioneer in wind energy [10]. The transition of the Danish power infrastructure from mainly centralised energy production to a decentralised system [7] is a good example for illustrating the importance of municipal utilities. The local electricity network owned by the municipality is essential for integrating renewable energies and other decentralised energy types such as electricity produced from combined heat and power units. Denmark is not the only country where a sustainable energy supply based on renewable energies can be built. In 2010, the German federal government presented an energy concept [11] to this end, which experts have called a “milestone in the German energy and climate protection policy” [12]. Backed by scenario modelling, Nitsch came to the conclusion that the technical and structural possibilities for achieving an energy transition towards a 100% renewable energy supply exist and can be described in their basic forms [12]. In his study, he modelled a supply of energy that meets the Carbon dioxide (CO<sub>2</sub>) reduction targets stipulated in the energy concept based on a suitable combination of increases in efficiency and renewable energy.

It can therefore be assumed that the distribution networks of municipal power utilities are the backbone of any turnaround in energy policy towards sustainable energy systems [9], and that municipal utilities have the potential to play an important role in their local governments’ efforts to reduce greenhouse gas emissions [13]. Municipal utilities play an important role as key facilitators of the German energy transition. Since virtually all existing grid concessions in the energy sector were up for renewal between 2012 and the end of 2016, more than 60% of all German municipalities considered remunicipalising the local energy infrastructure [2]. The establishment of municipal enterprises is the first significant step in this direction. The overall objective of remunicipalisation is to strengthen the constitutional right of municipal self-government by autonomously developing the municipal infrastructure. Local decision-makers must therefore be aware that increased decentralised energy production requires the involvement of local actors, such as municipalities, in energy planning [7]. The socio-political project referred to as the “Energiewende” requires polycentric governance. In light of the above, many local decision-makers came to realise that energy systems play an important role in the socioeconomic development of their respective community [14]. It therefore comes as no surprise that 72 municipal utilities have been established in the electricity sector since 2005 [15].

Against this background, it is interesting to explore the options available for newly established municipal power utilities. This article therefore focuses on the following four questions:

- Is there a regional concentration of such establishments?
- Can municipal power utilities only be established successfully in large cities?
- Are any legal forms particularly appropriate for the establishment of municipal public utilities?
- What role do strategic partnerships play in municipal start-up utilities?

The aim of this paper is to provide a better understanding of remunicipalisation in the German energy market and to encourage scientists to engage in more extensive research activities on the promising establishment of new municipal utilities. After all, a considerable amount of research must be conducted before we are able to gain a full understanding of the process of remunicipalisation and the establishment of municipal utilities.

## **DEFINITIONS AND OBJECTS OF INVESTIGATION**

Although every single public power utility is different, reflecting local characteristics, goals and values, they all have one thing in common: their purpose is to provide local customers with safe, reliable electricity at a reasonable price while contributing to the municipal budget.

In this article, we use a comprehensive definition of the term “remunicipalisation”. For our purposes, remunicipalisation means the taking back of municipal functions and services that were previously under private management or long-term concession.

Areas of service of general interest that were once privatised (“outsourced”) are turned back (“insourced”) into municipal operation, or materially (asset) privatised facilities are “bought” back and returned to public/municipal management, either wholly or in part [16, 17]. In contrast to private power companies, public power utilities are defined as public service institutions that do not serve shareholder interests. Municipal power utilities measure their degree of success by the amount of money that remains within the community following contributions to the municipal budget (citizen value), and not by the dividends paid out to shareholders around the world (shareholder value). Municipal power utilities have a number of special characteristics:

- They are administrative bodies or companies owned and governed by city councils or local utilities commissions;
- They are owned or dominated by the community, meaning that they are accountable to their local owners;
- They focus on public/citizen value;
- They can have different legal forms, but are controlled by the local government;
- They usually involve citizens in their decision-making (public accountability);
- They operate in different businesses along the value chain.

The business model of municipal power utilities is based on public ownership and local control. Municipal utilities are characterised by economic involvement along the whole value chain of energy supply. Their main activities are therefore the generation, transmission, distribution, trading and supply of energy. A number of newly established utilities have started out as supplier/distribution companies, but are working towards the ownership and maintenance of a distribution infrastructure for delivering power to customers. In short, it can therefore be said that having a municipal power utility is a manifestation of local control over the energy transition.

In Germany, the liberalisation process of the power market began in 1998. A key policy goal in this context was to separate grid operation from electricity generation (unbundling). Due to the so-called “de minimis” rule, small and medium-sized enterprises are not greatly affected by this separation. Companies with a small number of customers do not have to conduct these business activities in separate firms. This regulation is an advantage for the newly established municipal utilities because they do not fall under the restriction of unbundling. The “de minimis” rule applies to approximately 80% of all existing public utilities in Germany [14].

## **REGIONAL CONCENTRATION**

The map in Figure 1 shows the geographical location of municipal utilities that were established in clusters between 2005 and 2013. Most are located in the old West German states. In the newly-formed German states, the wave of remunicipalisation mainly occurred in line with German reunification in the 1990s. Table 1 is the legend to the map and informs about the full name of the new enterprise and the number of inhabitants in of the town, where they are located.

Towns and communities in the Federal State of Baden-Württemberg established the most municipal utilities, especially in the Black Forest, Greater Stuttgart and Lake

Constance. This federal state was followed by municipalities in North Rhine-Westphalia and Lower Saxony. Based on the numbers of companies, a decline from west to east is apparent. More than 95% of newly established municipal utilities are located in former West Germany.

A basic principle seems to be at work here: the positive experience gained by other municipalities and successful examples of municipal/local utility establishments and remunicipalisations increase the willingness of other towns and villages in the vicinity to take action, too. One notable example was the buy-back of the power system in Schöna (Baden-Württemberg), initiated by a citizen's movement. Stories of successful municipal/local utility establishment can encourage other policy-makers to become involved in the launch of municipal utility companies, as demonstrated by "Alb-Elektrizitätswerk Geislingen Steige". New municipal utilities provide high-profile examples of what communities can do for themselves, which may encourage other towns to establish municipal utilities. "Elektrizitätswerke Schöna" acts as corporate partner for several different municipal utilities (e.g. for Stadtwerke Stuttgart and Stadtwerke Tittisee-Neustadt), providing them with professional experience and operational know-how.

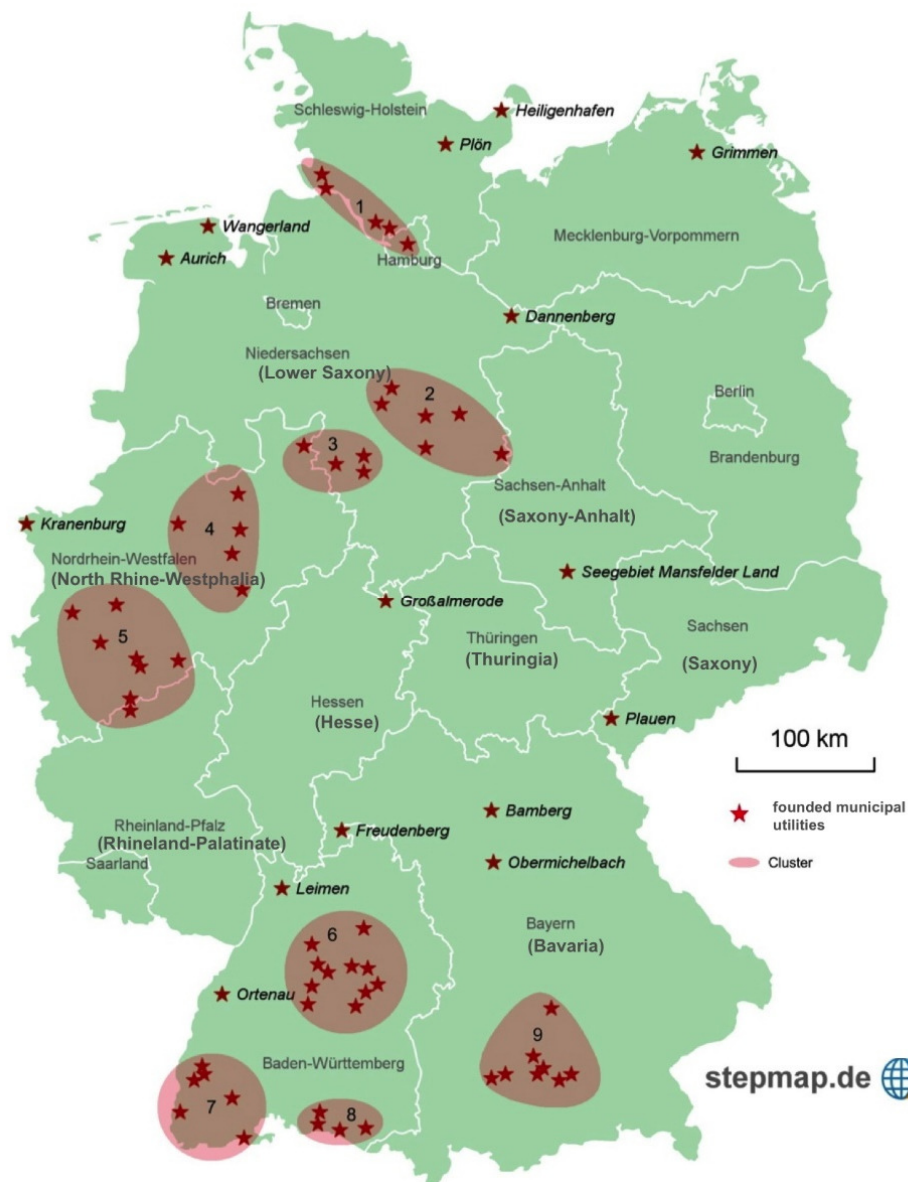


Figure 1. Map of 72 newly established municipal energy utilities in Germany

Table 1. Legend to the map of 72 newly established municipal energy utilities in Germany

Enterprise	Number of inhabitants	Enterprise	Number of inhabitants
Cluster 1 Region of Hamburg/Schleswig		Cluster 6 Stuttgart/Neckar Region	
Stadtwerke Brunsbüttel	13,000	Energieversorgung Mainhardt Wüstenrot	12,300
Stadtwerke Uetersen	17,800	Ver- und Entsorgungs- gesellschaft	5,300
Energie Rellingen	13,800	Sersheim	24,500
Gemeindewerke St. Michel Energie GmbH	3,700	Stadtwerke Ditzingen	613,000
Hamburg Energie	1,810,700	Stadtwerke Stuttgart	45,000
Cluster 2 Greater Hannover area		Remstalwerk	33,400
Gemeindewerke Wietze	8,000	Staufwerk	5,200
Gemeindewerke Wedemark	28,356	Energieversorgung Bad Boll	8,100
Stadtwerke Elm-Lappwald	22,400	Energieversorgung Lenningen	11,159
Stadtwerke Gifhorn	41,500	Gemeindewerke Ammerbuch	9,268
Gemeindewerke Uetze	20,900	Gemeindewerke Plüderhausen	45,167
Gemeindewerke Peiner Land	82,000	Stadtwerke Böblingen GmbH	
Cluster 3 Region around Wolfsburg		Cluster 7 Black Forest Region	
Stadtwerke Springe	29,000	Stadtwerke Emmendingen	27,000
Stadtwerke Weserbergland	23,300	Energieversorgung Denzlingen	13,700
Netzesellschaft Hessisch Oldendorf	19,800	Gemeindewerke Umkirch	5,200
Mindener Stadtwerke	81,900	Energieversorgung Titisee-Neustadt	11,900
Cluster 4 Region eastern Westphalia/Münsterland		Stadtwerke Müllheim Staufen	26,000
Stadtwerke Harsewinkel	24,100	Regionalwerk Hochrhein	14,100
Wadersloh Energie	12,600	Cluster 8 Lake Constance Region	
Gemeindewerke Bad Sassendorf	11,700	Gemeindewerk Allensbach,	16,000
HochsauerlandEnergie	56,500	Bodman-Ludwigshafen, Reichenau	1,450
Gemeinsame Stadtwerke	116,400	Hagnauer Gemeindewerke	60,100
Münsterland		Regionalwerk Bodensee	2,073
Cluster 5 Rhineland Region		Gemeindewerke Sipplingen	
Stadtwerke Mettmann	39,200	Cluster 9 Munich Region	
Stadtwerke Korschenbroich	33,000	Stadtwerke Pfaffenhofen	24,300
Stadtwerke Pulheim	54,000	Stadtwerke Landsberg	28,400
Stadtwerke Rösraht - Energie	27,200	Gemeindewerke Windach	3,700
Stadtwerke Lohmar	31,200	Energieversorgung Olching	38,400
Ahrthal-Werke	27,500	Regionalwerk Würmtal	6,300
Stadtwerke Waldbröl	19,300	Energieversorgung Putzbrunn	13,130
enewa, Energie + Wasser Wachtberg	19,786	Gemeindewerke Gräfelfing	12,677
Other regions		Gemeindewerke Oberhaching	
Energiegesellschaft Leimen	27,500	Other regions	
Energieversorgung Elbtaube	20,900	Stadtwerke Plauen	65,700
Energieversorgung Kranenburg	10,000	Gemeindewerke "Seegebiet Mansfelder Land"	9,559
Friesenenergie Wangerland	25,400	Energiewerk Ortenau Energiegesellschaft	60,000
Regionalwerke Bamberg	123,000	Gemeindewerke Obermichelbach	3,173
Grimmener Stadtwerke	10,300	Stadtwerke Heiligenhafen	9,200
Stadtwerke Aurich	40,400	Stadtwerke Plön Versorgungs	12,800
Stadtwerke Freudenberg	3,800	Stadtwerke Großalmerode	6,800

Source: Berlo & Wagner 2013 [15]

## LOCAL UTILITY ESTABLISHMENTS IN SMALL, MEDIUM-SIZED AND LARGE MUNICIPALITIES

The issue of whether large distribution networks are automatically more efficient must be considered if new energy companies are launched more frequently in small and medium-sized towns or in large cities. To this end, the Wuppertal Institute defined various groups of municipalities (population size classes). In cases where several municipalities formed a joint venture together, the populations of all the communities involved were added. For example, Remstalwerk GmbH & Co. KG was founded by four communities: Remshalden (13,455), Kernen (14,782), Urbach (8,688) and Winterbach (7,620). In total, they have around 45,000 inhabitants. Small municipalities with fewer than 20,000 or even 10,000 inhabitants are often involved in such inter-municipal public utility establishments. The true number of small towns (< 20,000 citizens) and municipalities with fewer than 10,000 citizens is therefore actually higher than shown in the statistical analysis and in the Figure 2.

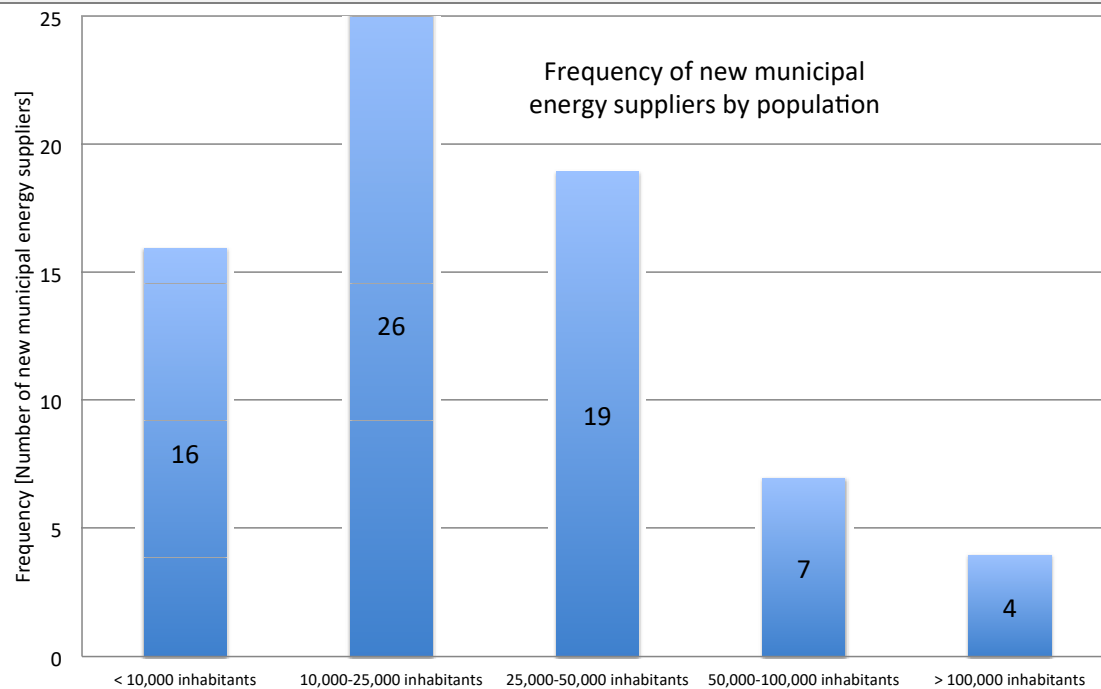


Figure 2. Company formations in small, medium-sized and large towns and cities (including municipal unions and totals of inhabitants)

As the graphs shows, most new municipal energy suppliers were established in towns with between 10,000 and 50,000 inhabitants (in 61 of 72 cases). 42 of the towns and municipalities in question have a population below 25,000. If every municipality that established a public utility company in cooperation with other municipalities or municipal utilities was counted, the number of towns and communities with a population below 10,000 or between 10,000 and 25,000 would be much higher. This indicates that small municipalities in particular consider joint public utility formations to be an interesting opportunity.

However, compared to the total number of towns and communities in Germany, municipalities with up to 25,000 inhabitants are rather under-represented when it comes to the establishment of new public utility companies. There are more than 11,000 towns and municipalities in Germany, but only 80 of them have more than 100,000 inhabitants. 605 are medium-sized towns or cities (20,000-99,999 inhabitants). This can partly be explained by the fact that there are 10,000 small towns or communities with a population below 20,000. One important explanation for the hesitancy to establish new public utilities in small towns and villages (especially those with less than 10,000 inhabitants) is that they find it difficult to establish and operate municipal utilities. The reasons for these difficulties include a lack of qualified personnel, a lack of technical know-how, skills and resources, and poor value for money. Another limiting factor for small communities is the complexity of the concession award procedure, which is why municipal/local authority cooperation projects, partnership concepts and strategic alliances play an important role in this context. The new municipal utilities tend to be small in size. Only a few of the new companies were established in towns or cities with a population exceeding 50,000. The reason for this is surely that public utility companies already exist in most large towns and cities.

## LEGAL FORM CHOSEN TO ESTABLISH PUBLIC UTILITY COMPANIES

Four different corporate forms can be distinguished for new public utilities:

- Limited liability company (GmbH);



- Limited liability company with limited commercial partnership (GmbH & Co. KG);
- In-house operation (Eigenbetrieb);
- Municipal enterprises (Kommunalunternehmen).

Most of the new companies were established as private-law entities. Under German law, local authorities can choose between all forms of company law. However, municipal regulations require that liability on the part of the municipality is limited to a certain amount. For this reason, a number of private forms and non-corporate associations are prohibited by law, which is why most of the municipal utilities organised in the Association of Municipal Enterprises (VKU) are private limited companies [18].

Under the provisions of German law, stock corporations (AG) can only theoretically be established in the case of large corporations. The relevant legal forms for economically feasible operation are GmbH, GmbH & Co. KG, a registered cooperative company, a registered association or a private law foundation [17]. Public sector organisations (usually in-house operations) are also legally possible. A municipal enterprise – an autonomous municipal company under municipal code (KU) – is a special form that is permitted only in Bavaria. Article 89 of the Bavarian Municipal Code (BayGO) denotes a municipal company as an independent company in the legal form of an institution under public law [19]. Figure 3 shows the distribution of newly established municipal utilities by legal form.

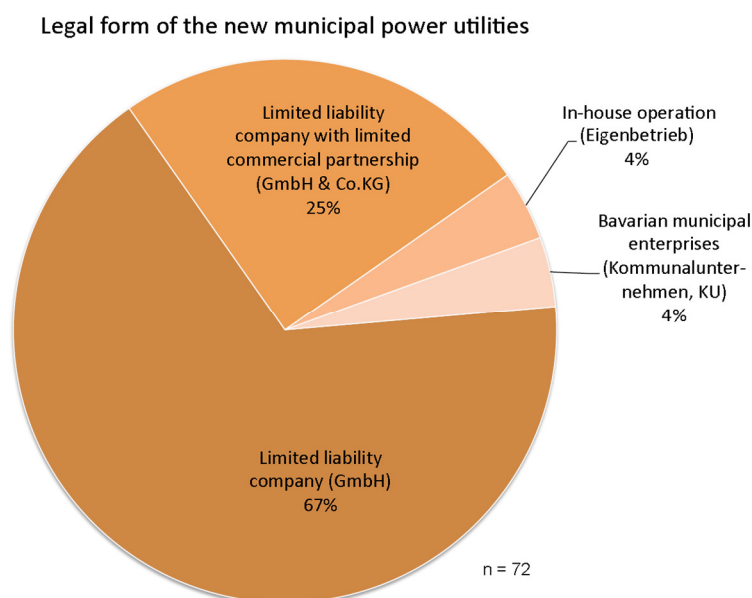


Figure 3. Legal form chosen for newly established utility companies

The most popular legal form is the limited liability company (GmbH), at 67%. The GmbH & Co. KG – a special form of limited liability company with limited commercial partnership – follows at 25%.

Most local decision-makers believe that limited liability companies are flexible and capable of adapting to changing market circumstances [15]. This legal form also allows the company to address the equity interests of third parties (such as a strategic partner). Unlike with in-house operations, limited liability companies have their own legal personality, they are not subject to cameralistic accounting and are separated from municipal assets. In terms of business risk, the main advantage of a GmbH is that the partners' liability towards their creditors is limited to the company's capital stock (LLC law). With a public legal form, on the other hand, the municipality is fully liable for all its financial obligations. In the event of municipal insolvency, the state would ultimately be liable. Certain risks exist in any business activity, and particularly in ownership transfer



of the power system (e.g. following disputes with the former concession holder over the fair purchase price, long delays, lawsuits, etc.). Against this backdrop, the limitation of liability is therefore a useful strategy. Other reasons for the dominance of the GmbH include the community's ability to influence the management, and the ease with which companies can be established.

## COOPERATION – SHAREHOLDERS OF NEWLY ESTABLISHED PUBLIC UTILITIES

Another aspect investigated was the shareholder structure of newly established public utilities. The question examined was whether, and to what extent, municipalities involved partners. There are obvious reasons against involving big energy supply companies in start-up projects. With such corporate investments, big companies (often acting as minority shareholders) seek to secure their position on the energy market [20]. In Chapter fourteen "Vertical integration in the energy sector" of the Twentieth Biennial Report of the Monopolies Commission, the commission came to the same conclusion for the year 2000/2001 [21]. A 25.1% participation in municipal utilities suffices to safeguard the interests of big companies as upstream suppliers in the long term.

With regard to the ownership structure of new municipal utilities, it was taken into account whether an inter-municipal or municipal-private cooperation was concerned. The main reason for entering into partnerships was to gain funding and/or access to additional know-how.

Figure 4 shows the different configurations of ownership structure: in 18 cases, new municipal utilities managed to avoid including established (experienced) partners. Two examples are Hamburg Energie and Stadtwerke Stuttgart. However, these two companies have large concession areas, and the cities used to operate their own public utilities before they were privatised. As yet, both companies are initially engaged in selling and marketing energy. They do not operate the network because the concessions have not yet expired. However, there are plans to take over the power grids in both cities once the concession period has lapsed. As such, the public utility foundations may be viewed as an important step for preparing the buy-back of the distribution network.

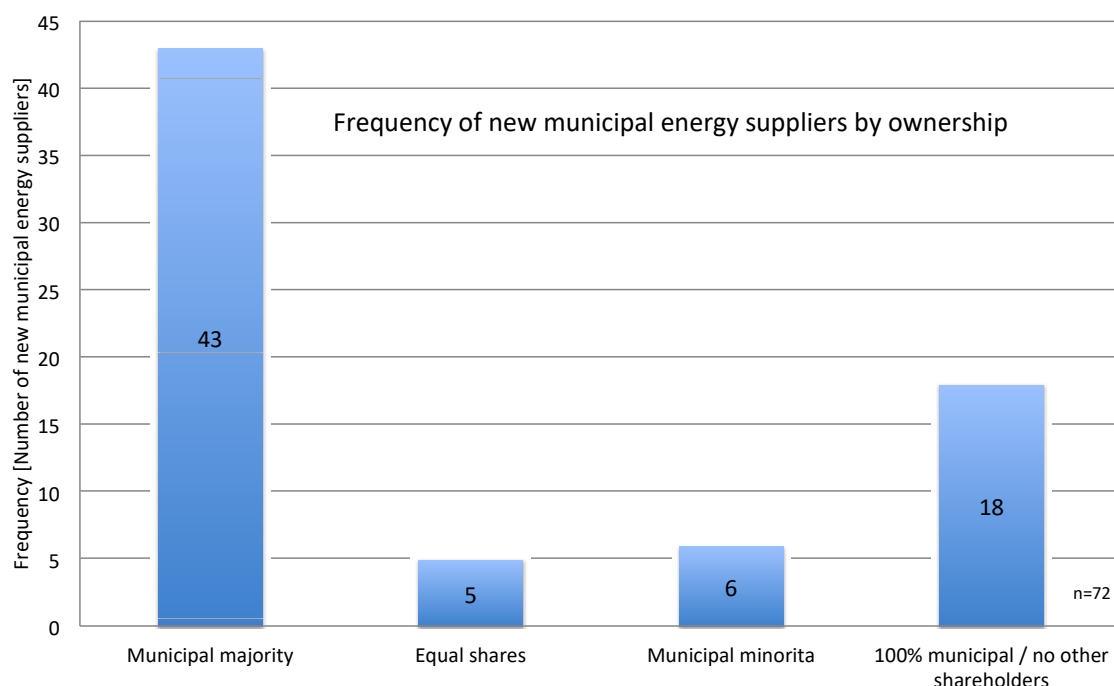


Figure 4. Shareholder structure

The figure above also shows that most of the new companies are wholly or mainly owned by the municipalities. When it comes to joint ventures, other public utilities in the vicinity are often involved as preferred partners [15]. The reasons for joining forces vary, but they usually revolve around the partners' expertise, dissatisfaction with the previous concession holder (which will often strive to become a strategic partner), and the wish to improve inter-municipal collaboration and horizontal partnership. In addition, other municipal shareholders have lower profit expectations, and the potential synergy of neighbouring municipalities is a further advantage. In most cases, local councils decided to cooperate with an experienced municipal partner. In spite of the frequent participation of partners, local authorities' desire for self-determination in energy supply is clearly evident [15, 22]. A non-municipal strategic partner was chosen only in 26 cases. Regarding the potential to play an important role in reducing greenhouse gas emissions at the local level, strategies for demand-side management or selling less electricity, for example, are easier to implement if there are no external shareholders to satisfy [13].

## CONCLUSION AND OUTLOOK

There is a definite trend towards remunicipalisation in Germany, as evidenced by the analysis presented in this article. Decades later, many cities have closed the book on energy privatisation and are pursuing a strategy of remunicipalisation. The authors show how remunicipalisation and municipal power utilities offer opportunities in the substantive development of energy efficiency and renewable energies, enabling them to offer high-quality energy services for the benefit of present and future generations. The trend towards remunicipalisation and the re-establishment of municipal utilities demonstrate the desire to further expand the scope of local policy. New municipal utilities can increase the local energy supply, making the energy transition visible [15]. The developments outlined above reflect the increasing relevance towards the primacy of local policy. By establishing municipal power utilities, one important condition for economic activity along the entire value chain (transmission, power generation and distribution) has been fulfilled.

The public sector has an exemplary role to play in addressing market deficiencies at the local level. Setting stable and consistent local policies on emissions reduction and engaging in a dialogue with the key stakeholders are important measures to improve the economic opportunities of a corporate strategy that focuses primarily on innovative energy services. Local decision-makers play an important role in climate action, as climate action plans at the local level are a trend that proves an increasing local commitment [23]. The development of a sustainable energy strategy at the local level is a complex activity, and various stakeholders and different measures need to be involved [24]. One decade after it became common practice to "sell the crown jewels of municipal property," a different perspective is experiencing a renaissance: many municipalities in Germany have started to realise that the element of common interest and public value in the realm of energy policy is an important field for local decision-makers. In recent years, 72 cases of energy remunicipalisation have been recorded, and many people have been positively affected by this national trend, the pace of which continues to accelerate dramatically. From a local perspective, the opportunities offered by municipal public utilities benefit the local economy and the regional development [22, 25]. Following a wave of privatisations at the end of the 1990s, the task of supplying electricity has now been put back in public hands in many German municipalities, which are discovering the opportunities and possibilities for local action evolving from remunicipalisation. Local policy-makers now realise that remunicipalisation enables independent energy policy to be implemented at the local level. This is essential for bringing about the transition to a sustainable energy system based on energy efficiency and renewable energies. Towns and cities increasingly see themselves as key players in the German "Energiewende".

Remunicipalisation is not a question of size. New municipal power utilities have been successfully established in towns and cities of all sizes. If there is a lack of knowledge, municipalities enter into close strategic partnerships, with cooperation agreements and partnerships with other municipalities being local councils' preferred methods. The GmbH legal form is a good starting position for enabling a strategic partner to enter the next development stage and a good possibility to separate the municipal utility from municipal assets. Studies by Leprich/Müller-Kirchenbauer and DIW Berlin provide evidence that small local grid operators are more likely than large companies to seize the opportunities of the energy transition, and they are better prepared to develop smart grids and operate their grids more economically [26, 27].

The knowledge gained in the field of remunicipalisation and the establishment of municipal utilities is still far from complete. One of the main reasons for this is that such a development is a new phenomenon, hence social science endeavours to describe and analyse this field are at an early stage [3]. The outcomes of this article suggest many avenues of research and future developments. Future avenues of research should explore the German energy regime's preservation strategies and the question of whether the economic hopes and expectations of remunicipalisation are ultimately met.

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